maxon CIC EUROPE

SL6000 Series
Programming Manual

maxon

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Introduction

The SL6000 Series Programming Manual is to be used in conjunction with the SL6000 Series programming Kit (PR- SL6000-01), which is made up of PK-SL6000-03 programming software and programming lead PK-SL6000-01 combined these items will program the SL6000 Series' personality. The SL6000 Series supports a wide range of signalling and control functions including:

- Fully Programmable
- Automatic Number Identification (ANI) on PTT
- Emergency Calling
- Group Calling
- VOX (Voice Operated Transmit)
- Optional Penalty Modes and PTT Time Out
- DTMF Transmission
- CTCSS/DCS
- Cloning
- Password Protection
- Scanning Priority Look back

The SL6000 Series is programmable via the accessory socket on the top of the radio using the SL6000 Series Programming Kit PR- SL6000-01. This is made up of programming software PK-SL6000-03 and Programming lead PK-SL6000-01.

The software is best downloaded from the Maxon CIC Europe Web-site http://www.maxoncic.co.uk. The software is an XP Windows based package.

Operating Systems

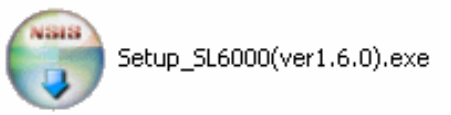
Compatible Microsoft Windows 98, 2000, NT, XP

Computer

Pentium II processor or later (recommended)

Programmer Installation

The SL6000 Series programmer is best downloaded from the Maxon CIC website; if you have difficulty downloading the software then you can obtain a copy via the Sales team. The software is provided on a CD-ROM. Insert the disk into your CD Drive. Click on 'Start'; click on 'Run'. Type, 'd:\setup' or click on 'Browse' and then look for the setup file on your CD drive. Double click on the set-up icon to install. Follow on-screen instructions.



Programming

This programmer will program the radio parameters and the DTMF features without the need for cable change or software change. All necessary features can be accessed from the front window via tabs.

To open the programmer, double-click on the SL6402/6102 icon in the Start Menu Taskbar.

The SL6000 Series programming utilises COM 1 on the PC as the default programming port. The programmer will detect all available com ports automatically.

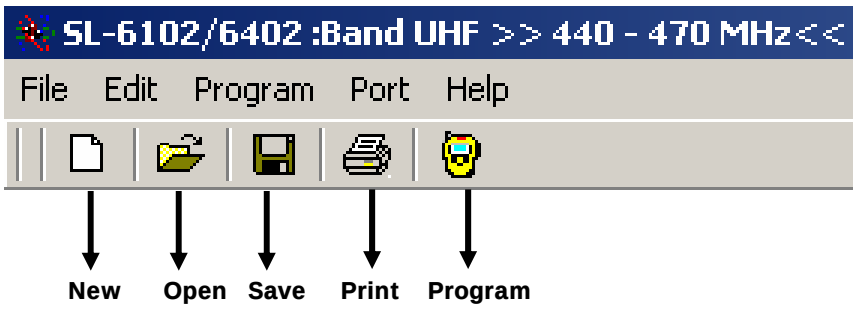
The programming kit required is the PR- SL6000-01

Kit consists of:

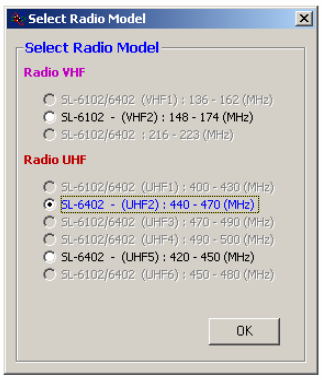
PK-SL6000-03 programming software

Programming lead PK-SL6000-01

Programmer Tool Bar



(Fig.1)



When the programmer is opened select the desired model and band.

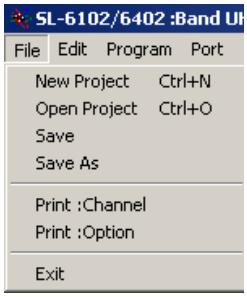
SL6402 VHF (148.0000 – 174.0000 MHz)

SL6102 VHF (440.0000 – 470.0000 MHz)

(Fig.2)

There are 5 items in the top right hand side tool bar, File, Edit, Program and Help.

File



Files can be saved, and viewed at a later date, or previously saved files opened, using the "File" Menu on the tool bar. Alternatively the icons below the tool bar can be used.

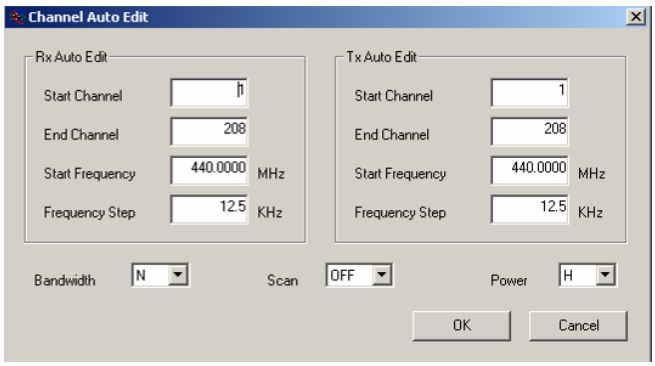
Please note that it may prove helpful to create named folders in the SL6000 series directory to save files specific to that radio and it's band, i.e. SL6000_WITH_SELCALL, etc.

(Fig.3) there are also two print options, Print Channel only and Print Options Settings.

Edit

(Fig.3)

The edit feature enables the channels to be set automatically. Select a start/end channel, set a starting frequency and choose the frequency step, example: If 12.5 KHz is set for channel one with a starting frequency of 440.000MHz, then channel two will be automatically set to 440.0125 MHz.



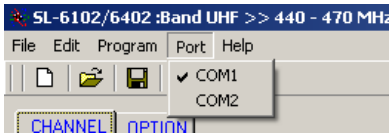
(Fig.4)

Program

To **Program** or to **Read** from the radio click the "Program" Menu along the Tool bar. Click on "Download/Upload" Alternatively use the Yellow read/write icon. Select Read or Write.

(Fig.5)

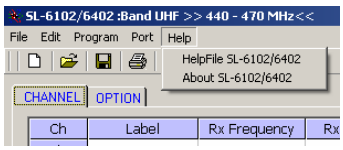
Com Port select



The com ports can be changed from the drop down list on the programming progress window.

(Fig.6)

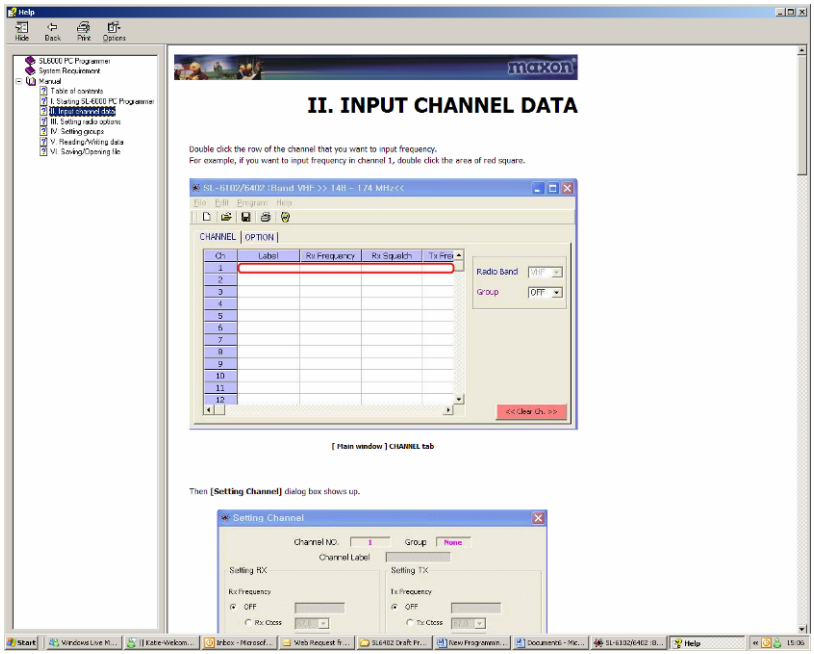
Help


SL-6102/6402 :Band UHF >> 440 - 470 MHz<<
File Edit Program Port Help
HelpFile SL-6102/6402
About SL-6102/6402
CHANNEL OPTION
Ch Label Rx Frequency Rx

About SL6102/6402 will give the current version number of the Programmer.

Help files are accessed from this title.

(Fig.7)

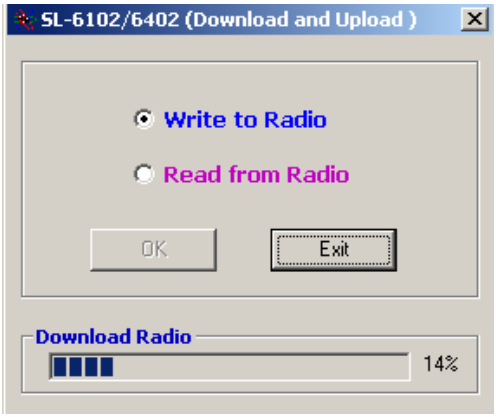

II. INPUT CHANNEL DATA
Double click the row of the channel that you want to input frequency.
For example, if you want to input frequency in channel 1, double click the area of red square.
[Main window] CHANNEL tab
Then [Setting Channel] dialog box shows up.
Setting Channel

(Fig.8)

Programm

Program Mode

To place the SL6402/6102 into program mode, connect PK-SL6000-01 programming lead to the PC and the SL6402/6102 via 3.5mm stereo jack connector on the top panel of the SL6402/6102. To enter the radio into programming mode, press and hold the Monitor button and switch the radio on. Let go of monitor when "PC Programmer" is displayed on LCD. The radio is now in programming mode and is ready to take serial commands from the PC.



To **Program** or to **Read** from the radio click the "Program" menu along the tool bar. Click on "Download/Upload" alternatively use the read/write icons programming menu: -

Select either read or write and click **"OK"**

(Fig.9)

Reading

SL6402/6102 assumes the PC is ready to receive data. When serial commands are sent though the lead, The SL6402/6102 will now transmit the data. During this sequence, the red LED will flash. In PC program reading mode, the LCD displays "**READING**", once reading has finished "**COMPLETED**" is displayed. The progress bar displays the percentage of completion.

Writing

SL6402/6102 assumes the PC is ready to transmit data. When serial commands are sent though the lead the PC starts the transmission of data. During this sequence, the green LED flashes. In the PC program writing mode, the LCD displays "**WRITING**". once writing has finished "**Completed**" is displayed. The progress bar is displays the percentage of completion.

Cloning

The SL6402 radio requires a cloning cable. The frequencies and functions can be programmed from radio to radio by using this cable.

Ensure that both radio's power is in the switched "OFF" position.

Place the master radio (the radio which already has desired program information in the EEPROM) in the data master mode by holding the radio's monitor switch and then turning radio power switch to the "ON" position (the red LED on the radio flashes). Release the monitor switch on the third led flash (the radio will display "**MASTER**" message on the LCD).

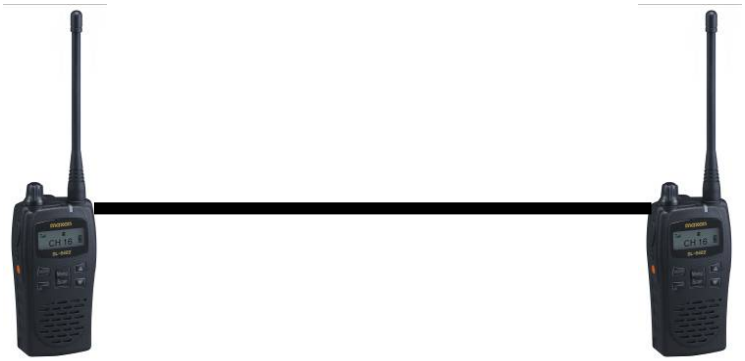
Place the slave radio (the radio which is not programmed, or has program information that will be erased) into data slave mode by holding the radio's monitor switch and then turning the radio power switch to the "ON" position (the red LED on the radio flashes). Release the monitor switch on the second led flash (the radio will display "**SLAVE**" message on the LCD).

Connect the cloning cable through accessory socket. Press the slave radio's monitor switch. The LED will glow green. Press the master radio's monitor switch. The LED will glow red. And cloning will start.

After cloning, the slave radio displays "**COMPLETED**" message and the master radio displays "**MASTER**" message on LCD.

For cloning other radios, repeat above procedure.

Cloning set-up

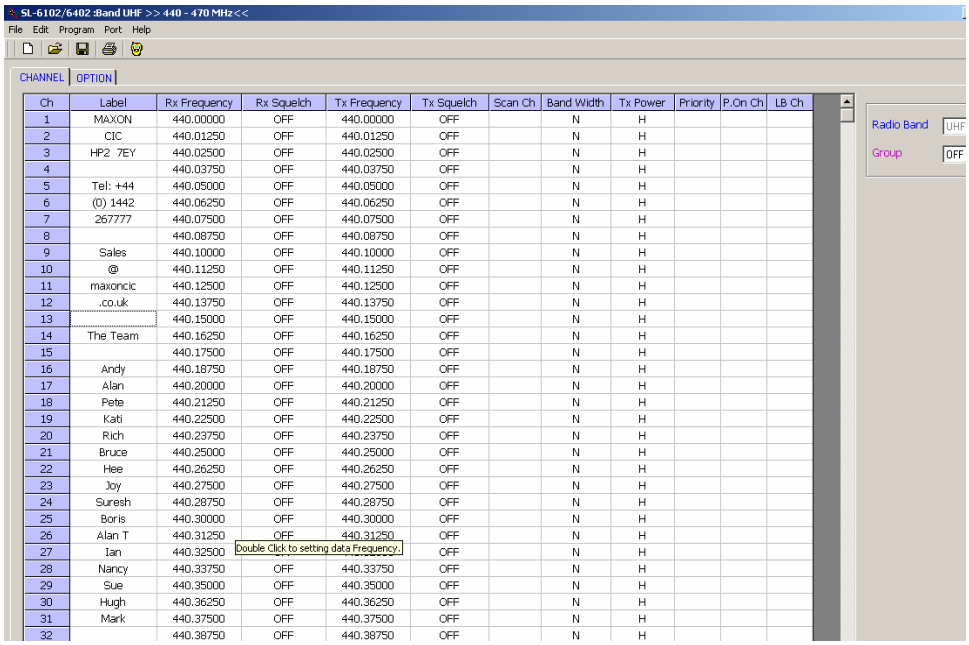


Master **SL6402/6102 Cloning lead** **Slave**

(Fig.10)

Standard Radio Parameters

Radio parameters



(Fig.11)

Radio Band

To select Band click on “Radio band”

UHF2 (440~470MHz) VHF2 (148~174MHz)

Channel Spacing

Select the correct channel spacing by double clicking the bandwidth parameter.

S = 25 kHz channel spacing.

N = 12.5 kHz channel spacing.

TX Power

There are two settings for TX power high and low

Low = 1 Watts

High = 5 Watts

Label

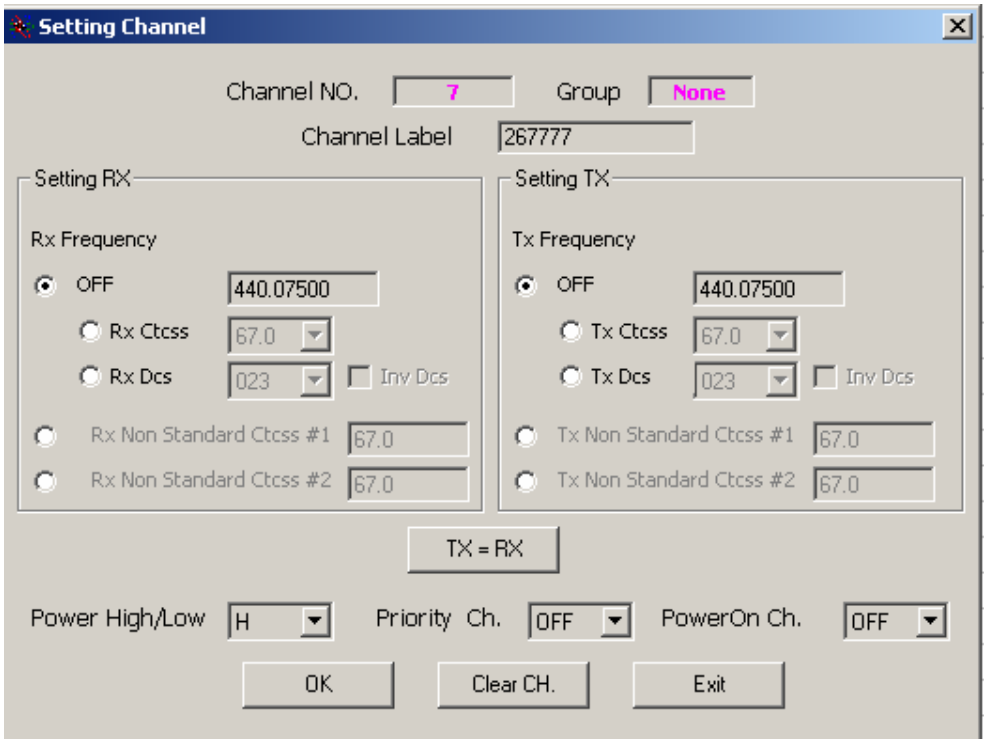
This feature allows the channel to labelled specific names; these could be user names or area names. The first 32 channels can be labelled using up to 8 characters.

Select Radio Parameters

Frequency

To select the correct frequency double click on the desired channel as per figure 10.

Frequency menu



(Fig.12)

Channel and Group numbers are displayed at the top of dialogue box.

Enter TX/RX frequencies using decimal point. If the frequencies are back to back the “RX=TX” will copy the frequency to both settings.

Note: Frequency must be divisible by 6.25 kHz.

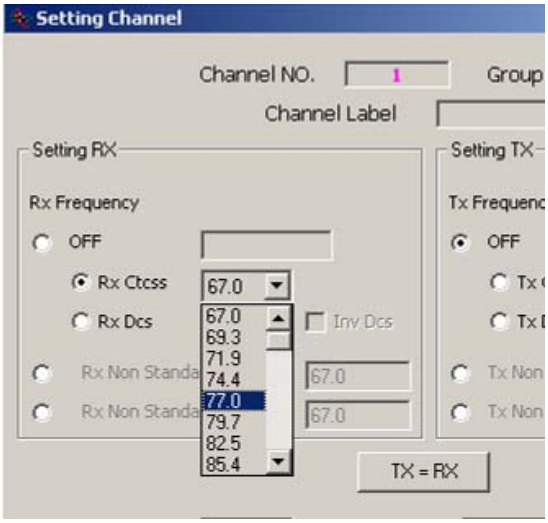
Power on channel

Double click power on channel (please note this can only be done if the frequencies are already entered). When activated radio will power up on selected channel, if not selected the radio will power up on the last channel used. This parameter is marked **PowON CH**.

CTCSS

To set the CTCSS (Continuous Tone Coded Squelch System) click on correct RX/TX CTCSS, scroll to correct tone frequency and select by single click. See table 14 for available tones.

CTCSS setting



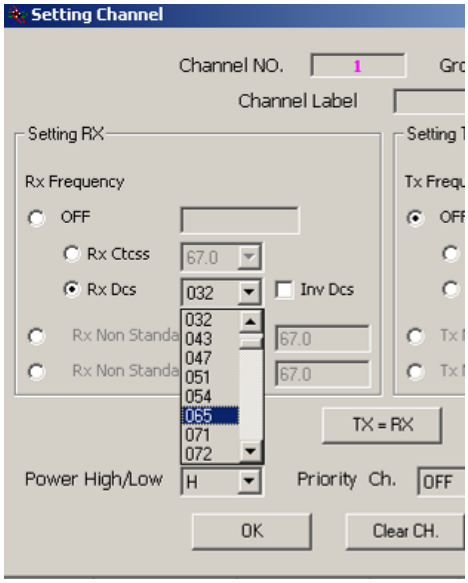
(Fig.13)

CTCSS Table

No.	Freq. Hz	No.	Freq. Hz	No.	Freq. Hz	No.	Freq. Hz	No.	Freq. Hz
01	**67.0**	*11*	**94.8**	*21*	**131.8**	*31*	**179.9**	*41*	**218.1**
02	**69.3**	*12*	**97.4**	*22*	**136.5**	*32*	**183.5**	*42*	**225.7**
03	**71.9**	*13*	**100.0**	*23*	**141.3**	*33*	**186.2**	*43*	**229.1**
04	**74.4**	*14*	**103.5**	*24*	**146.2**	*34*	**189.9**	*44*	**233.6**
05	**77.0**	*15*	**107.2**	*25*	**151.4**	*35*	**192.8**	*45*	**241.8**
06	**79.7**	*16*	**110.9**	*26*	**156.7**	*36*	**196.6**	*46*	**250.3**
07	**82.5**	*17*	**114.8**	*27*	**159.8**	*37*	**199.5**	*47*	**254.1**
08	**85.4**	*18*	**118.8**	*28*	**162.2**	*38*	**203.5**		
09	**88.5**	*19*	**123.0**	*29*	**167.9**	*39*	**206.5**		
10	**91.5**	*20*	**127.3**	*30*	**173.8**	*40*	**210.7**		

(Fig.14)

DCS & DCS Table



(Fig.15)

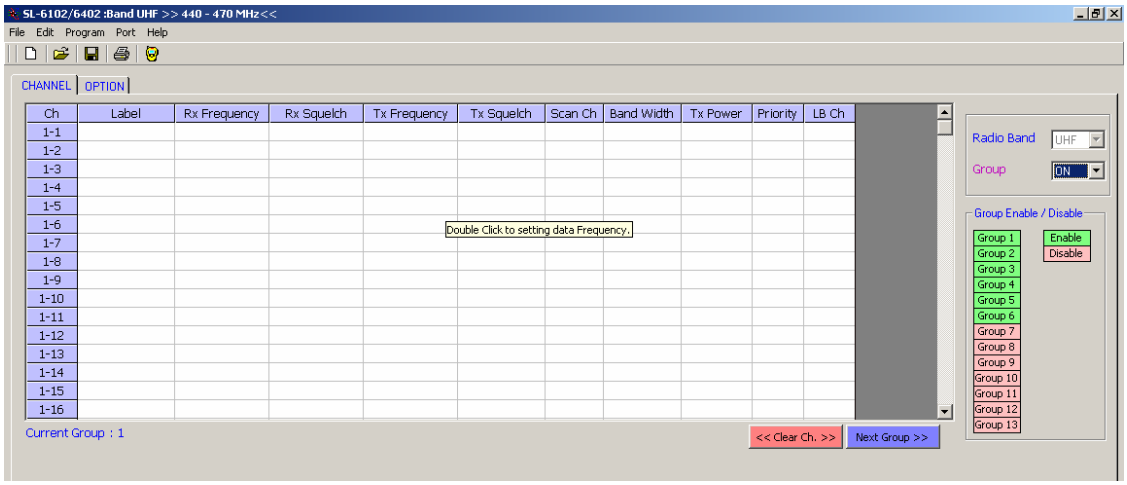
To set the DCS (Digital Coded Squelch) click on correct RX/TX DCS, scroll to correct code tone and select by single click. See table 16 for available codes. **For inverse code tick Inverse DCS.**

Octal Code	Octal Code	Octal Code	Octal Code	Octal Code	Octal Code	Octal Code	Octal Code	Octal Code
023	071	134	223	306	411	503	631	734
025	072	143	226	311	412	506	632	743
026	073	152	243	315	413	516	654	754
031	074	155	244	331	423	532	662	
032	114	156	245	343	431	546	664	
043	115	162	251	346	432	565	703	
047	116	165	261	351	445	606	712	
051	125	172	263	364	464	612	723	
054	131	174	265	365	465	624	731	
065	132	205	271	371	466	627	732	

(Fig.16)

Group Setting

To select a group single click on Group Setting, then select ON. To select the number of required groups double click the pink highlighted group column. The selected groups will then be enabled and highlighted in green. Double click on the green and the group will be disabled again.


SL-6102/6402 :Band UHF >> 440 - 470 MHz<<
File Edit Program Port Help
CHANNEL OPTION
Ch Label Rx Frequency Rx Squelch Tx Frequency Tx Squelch Scan Ch Band Width Tx Power Priority LB Ch
1-1 1-2 1-3 1-4 1-5 1-6 1-7 1-8 1-9 1-10 1-11 1-12 1-13 1-14 1-15 1-16
Double Click to setting data Frequency.
Radio Band UHF
Group ON
Group Enable / Disable
Group 1 Group 2 Group 3 Group 4 Group 5 Group 6 Group 7 Group 8 Group 9 Group 10 Group 11 Group 12 Group 13
Enable
Disable
Current Group : 1
<< Clear Ch. >>
Next Group >>

Group (Fig. 17)

The SL6402/6102 is capable of storing up to 13 programmed groups with up to 16 channels per group for a total channel capacity of 208 channels.

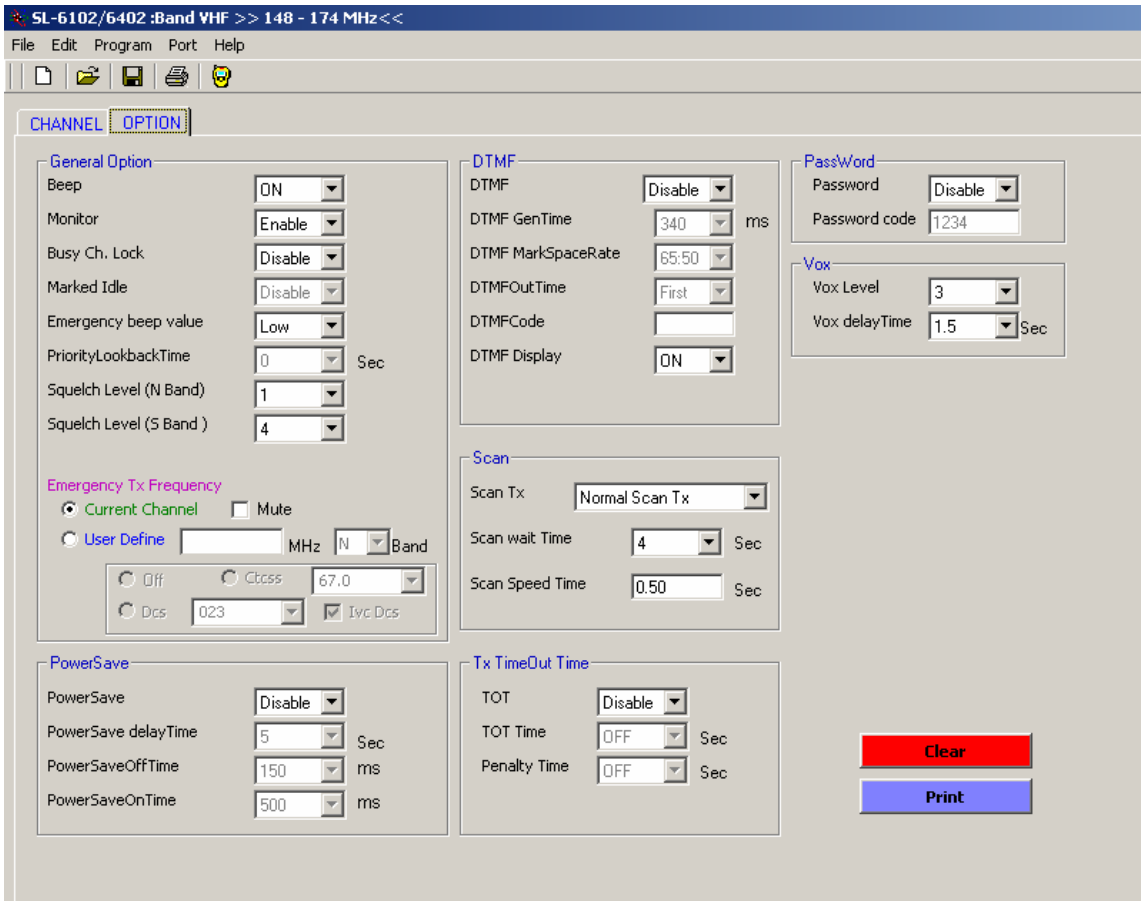
Next Group

The blue next group Tab will move the cursor to the next group.

Clear Channel

To clear one channel, highlight channel single click clear channel

Options



(Fig.18)

General Option

Beep

This setting will turn the switch on melody globally and key press alerts on/off

Monitor

Programmed to enable or disable. Pressing the monitor key will open the squelch and switch on the loudspeaker. Everything on the channel, including FM noise, will be heard.

It is possible to disable the monitor key via the programmer, to prevent a user openly monitoring a channel in a closed user group system.

It is common practice to allow users to listen to a channel before placing a call. This allows the user to check they are not going to transmit over a conversation from another user group. This allows more efficient use of the RF channels available.

Busy Ch. Lock

The radio has several inhibit functions which restrict transmission under the following conditions:

Busy Channel Lockout – **Enabled**: Upon PTT being pressed, if carrier is present, the radio shall not transmit and an audible alert tone will be heard.

Busy Channel Lockout – **Disabled**: Upon PTT being pressed, the radio shall transmit regardless of the presence of carrier.

Mark Idle

Marked Idle enabled: Can only be enabled if Busy Channel Lockout is ON. If the Busy Channel Lockout is on and carrier is detected, the radio shall be permitted to transmit if the RX squelch option is valid.

Emergency Beep Value

Change the volume of the emergency call alerts High/Low

Priority Look-Back Time

One channel can be programmed by the Dealer to be the Priority Channel, which will enable 'Look-Back'. Pressing the Scan button activates Priority Look-Back. Priority Look-Back instructs the radio to periodically 'Look-Back' to the priority channel for the presence of a carrier regardless of the channel that the user may be on. The frequency that the radio will 'Look-Back' to the priority channel can be programmed between 1 to 7 seconds in 1-second increments. When carrier, or carrier and tone, are removed, the radio will revert back to the previously selected channel.

Squelch Level (N band)

The squelch level can be programmed for 12.5 KHz from 1 to 10.

Squelch Level (S band)

The squelch level can be programmed for 25 KHz from 1 to 10.

Emergency TX Frequency

The Emergency function is initiated when the lower orange side button is pressed; a pre-programmed DTMF ANI sequence is sent. Three ANI calls will be sent followed by audible tones lasting five seconds in duration. A 3 second press is required to enable an emergency call.

The Emergency feature can also be programmed to transmit on either a user defined frequency or the current channel. The emergency beep value can be set High/Low.

Emergency TX signaling

User defined CTCSS and DCS can be applied to the user defined emergency frequency.

Powersave

PowerSave (Enable/Disable)

Use powersave or not.

Powersave delay Time (1~8)

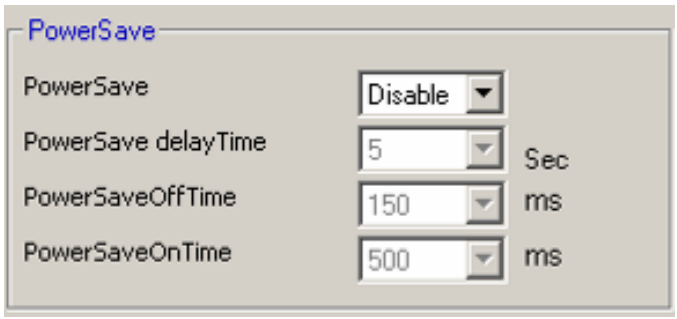
Set 'power save delay time' between 1 to 8 sec. in increments of 1 second. when Powersave is enabled only.

Powersave Off Time (50~200)

Set 'powersave off time' between 50 to 200 ms in 10 ms increments.

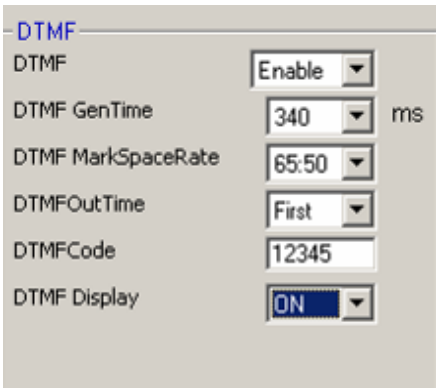
Powersave On Time (100~4000)

Set 'powersave on time' between 100 to 4000 ms in 100 ms increments



(Fig.19)

DTMF



DTMF

Short for Dual Tone Multi-Frequency, the system used by touch-tone telephones. DTMF assigns a specific frequency (consisting of two separate tones) to each number so that it can easily be identified by the CPU. Ensure DTMF has been enabled.

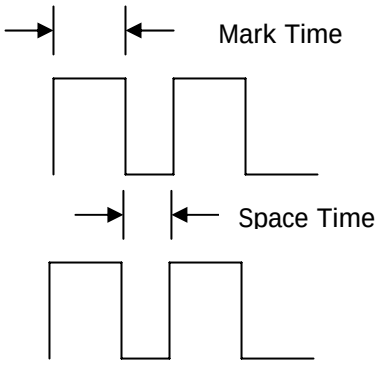
(Fig.20)

DTMF Gen Time

This is the amount of time that the radio's transmitter is active before the first DTMF digit is transmitted. Can be set to 240ms or 340ms.

DTMF Mark Time Ratio (65:50/55:50):

Set ratio of one DTMF tone time to gap time between two tones. The mark time is the amount of time = Positive slope 0 – 100ms



DTMF Space Time

The space time is the amount of time = Negative slope

0 – 100ms

DTMF out Time

DTMF out time is the point at which a DTMF ANI can be transmitted. This can be sent at the start or end of a transmission. If set to start a pause in speech at the start of transmission is required.

DTMF Code

This is where the sequence or set of sequences to be transmitted as DTMF 1 ~ 9 can be entered. Up to 5 Characters from 0-9, a -d, *, # may be transmitted.

DTMF Display (ON/OFF)

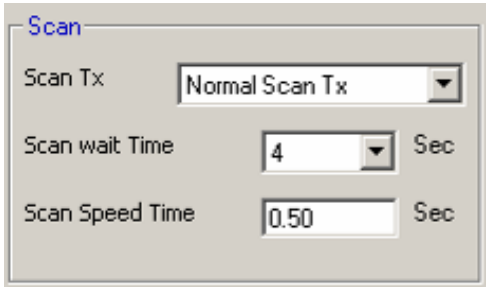
Set to display DTMF code on LCD or not, when DTMF signal is received.

Scanning Parameters

Scan TX

When priority channel is enabled, select [Priority Scan TX] or [Priority Only TX].

When priority channel is disabled, select [Normal Scan TX) or [Rx Only, No TX].



(Fig.21)

Priority Scan TX: The radio can transmit on the stopped scanned channel. If the radio has not stopped on a scanned channel, it will transmit using priority channel.

Priority Only TX: You can transmit using priority channel only. If priority is not set, TX is inhibited.

Normal Scan TX: You can transmit on the stopped scanned channel. If priority is not on the stopped scanned channel, TX is inhibited.

Rx Only, No TX: TX is inhibited. If you try to transmit, the radio emits an audible alert.

Scan wait Time (0~15): Set 'scan wait time' between 0 to 15 seconds in increments of 1 second.

Scan Speed Time (0.05~2): Set 'scan speed time' between 0.05 to 2 seconds in increments of 0.01 sec.

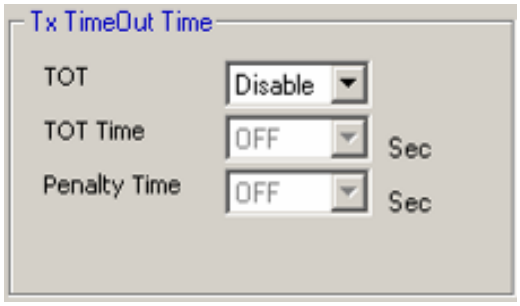
Note: please see operations manual for details on scanning setup

Settings and Timings

TOT (Enable/Disable): Use 'TX timeout time' or not.

TOT Time (OFF/10~990): Set 'TX timeout time' to OFF or between 10 to 990 seconds in increments of 10 sec. This parameter can only be set if (TOT) is enabled.

Penalty Time (OFF/5~75): Set 'Penalty Time' to OFF or between 5 to 75 seconds in increments of 5 seconds.

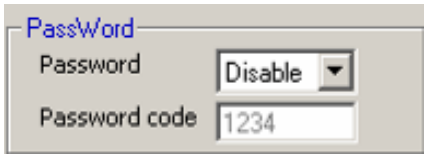


(Fig.22)

Password

Password (Enable/Disable) Activates and deactivates the password function.

Password code (4 digits) Select the preferred Password code, 4 digits are required. This parameter can only be set if (Password) is enabled.



(Fig.23)

Password protect

Overview

This function can be set to block unauthorised usage of the unit. When the password is enabled, a 4 digit password code is required to be entered at power up.

Enable and Disable password function

To enable the password function, press and hold the Menu button for 2 seconds. The LCD display will show the available menu's. Using the menu button, press the menu button until "**Pswd Off**", is displayed. To enable the password use the channel ▼▲buttons until "**Pswd On**" is displayed.

To disable the password, repeat the above.

How to enter the password

To add the password, switch on the unit, briefly the word Password is displayed on the unit, then is replaced by 0000 (4 zero's). A ⬇ symbol is positioned above the 1st zero (left hand zero); this signifies that this digit is the first of the Password digits to change. Using the ▼▲arrow keys, select the first number of the Password, then press the PTT button to store the number. As the PTT is pressed, the arrow moves one digit to the right, now enter the second number of the password, and again save the number by pressing the PTT button. Continue to repeat this process for digits 3 and 4.

There is no limit on password entry attempts.

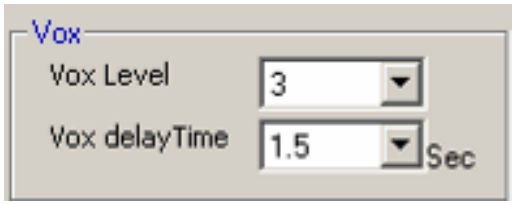
Once the PTT button is pressed after the 4th number, the unit will accept or decline the password.

Warning Note: - if a Password is lost or forgotten, then the unit must be reprogrammed by an authorised Maxon reseller.

VOX

The VOX setup can be found within the Options page.

Transmit signal immediately without pushing PTT key (**P**ush **T**o **T**alk) when radio detects a voice signal over a defined level though the microphone.



(Fig.24)

VOX Level (1~9) The VOX level can be set between 1 and 9

VOX Delay Time (0.5~3) the VOX delay time can be set between 0.5 to 3 seconds in increments of 0.5 sec.

Contact Details

Should you have any queries regarding this manual, or the information within it, please contact:

Maxon House,
Cleveland Road,
Hemel Hempstead,
Hertfordshire,
United Kingdom,
HP2 7EY

Tel: + 44 (0) 1442 267 777
Fax: + 44 (0) 1442 215 515
info@maxoncic.co.uk
www.maxoncic.co.uk

Technical Support

Tel: + 44 (0) 1442 226 170

Email: **technicalsupport@maxoncic.co.uk**

Customer and Sales Support

Telephone: + 44 (0) 1442 267 777
Email: sales@maxoncic.co.uk

Repairs

Tel: + 44 (0) 1442 267 777
Email: repairs@maxoncic.co.uk